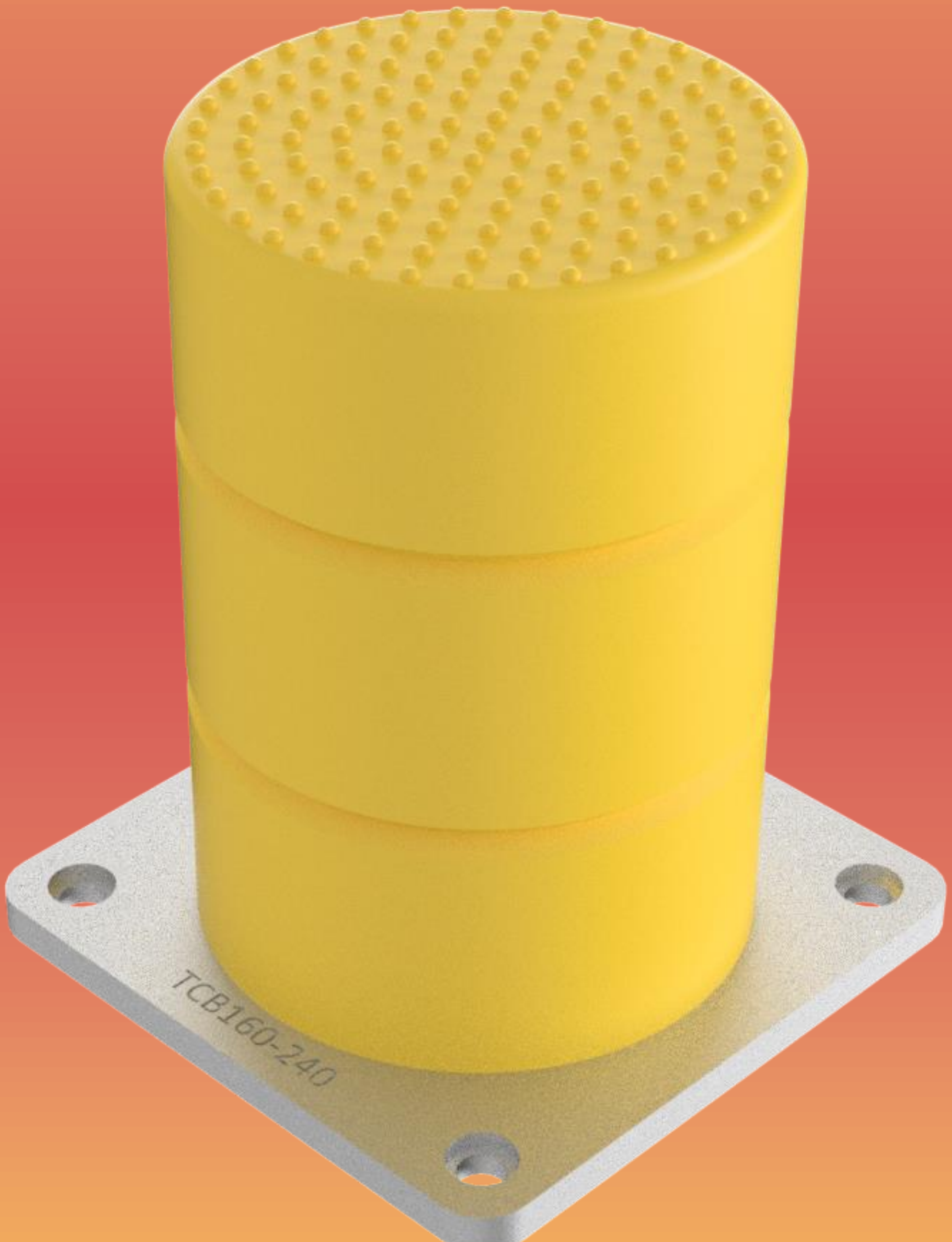
technogrid®
ENERGY ABSORPTION SYSTEMS

CELLULAR BUFFER BROCHURE



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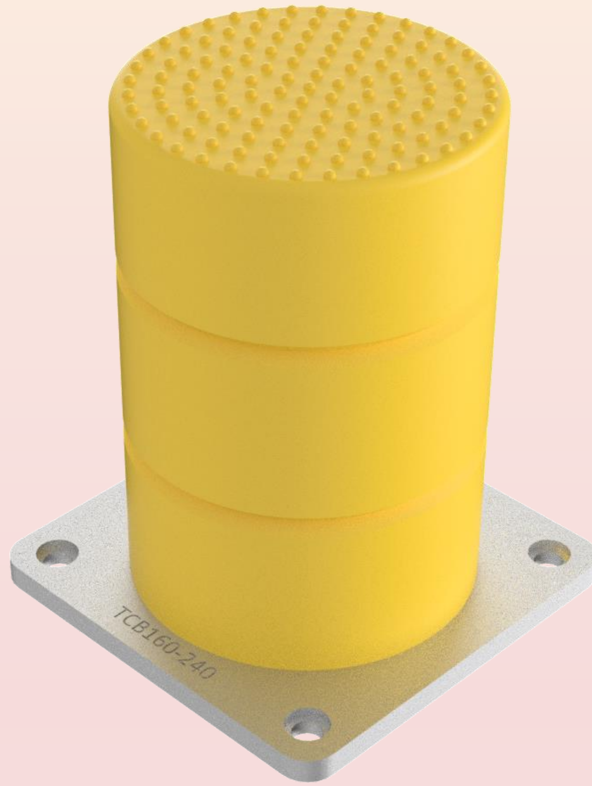
General Introduction



Cellular buffers are damping units that absorb impact energy to prevent damage to moving equipment and will result in smaller and more cost-effective structures. They have high absorption capacity with long compression lengths. This translates into smaller end loads and favourable deceleration values. Cellular buffers have a compression body made of cellular polyurethane elastomer with high structural stability. Their outstanding characteristic is their volume compressibility, which produces a short transverse elongation under pressure.

Due to the wide variety of available buffer designs, we can offer a solution for many different applications. We have a standard range of cellular buffers to provide for individual solutions. Special designs are always possible by request.

Typical Applications

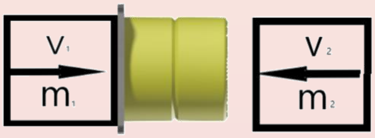
Cellular buffers can be used in varied mechanical machine impact applications and locations that range from indoor to outdoor installations. The nature of the cellular buffer is that they result in lower deceleration values due to the compressibility of the units. This in turn results in lower end forces and cheaper structures.

- **Long Travel Crane end stops**
- **Cross Travel Crane Trolley stops**
- **Conveyor Counterweight Trolley end stops**
- **Gravity Counterweight Arrestor buffers**
- **Transfer cars**
- **Smelter and rolling mill machines**
- **Handling technology**
- **Plant construction and engineering**
- **Conveyor, transport and gate systems that are equipped with form-locking drives (e.g. chain or toothed rack).**
- **Elevator Under travel buffers**

Application Engineering

The application engineering of the cellular buffer is complex and the use of dynamically and statically recorded load diagrams, precisely defined characteristic curves, physical dimensions, and mathematical formulae are used to define a buffer in application.

Establish the impact mass and impact velocity.

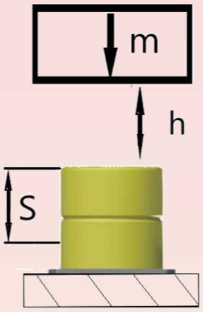


- **Calculate the basic energy equation:**

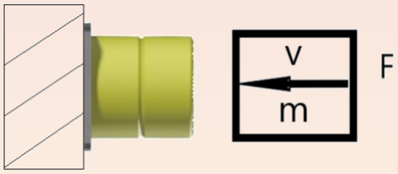
  for horizontal applications $E = \frac{1}{2} m. v^2 + F.s$

  or for vertical applications $E = m.g.(h + s)$.

- **Determine the energy distribution for each cellular buffer.**
- **For vertical applications, translate the fall height into an equivalent velocity $v = \sqrt{2.g.h}$ to read off the graphs.**



- **Select the appropriate cellular buffer from the unit graphs.**
- **Pinpoint the energy and velocity on the buffer Energy/Stroke graph to determine the predicted stroke.**
- **Pinpoint the Stroke and velocity on the Force/Stroke diagram to establish the suggested buffer end force.**



F = Drive Force, m = impact mass, v = impact velocity, h = fall height, s = Stroke

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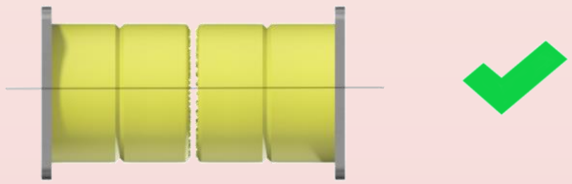
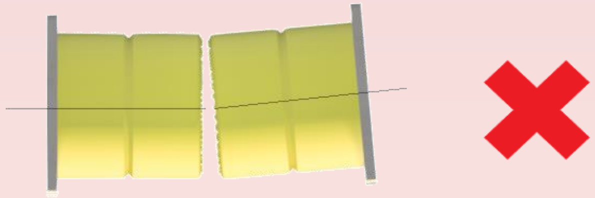
Installation and Fixing

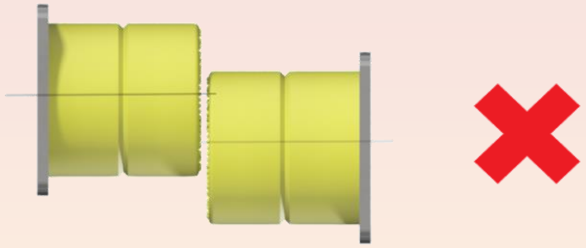
Mounting plate should be flat while the impact plates or surfaces must be level and parallel with the buffer. This avoids transverse loading of the cellular material and ensures a concentric, linear application of force and an impact over the full area of the buffer face.



It is recommended from the risk analysis and operation of cellular buffers that they should be replaced every **five years** for safety-relevant applications.



Angle of impact should not exceed 5 degrees.



Vertical eccentricity of oppositely mounted buffers must not be higher than 10% of the buffer's diameter.

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Cellular Buffer Features

The compressibility of Cellular buffers allows for very good compression lengths which results in lower deceleration values. Cellular buffers are resistant to aliphatic hydrocarbons, such as oils and greases, as well as ozone, UV-radiation, and aging. Technically, you can expect generally high durability.

When exposed to hydraulic oil, hot water or water vapor over longer periods, the cellular body has limited durability. Cellular buffers are not resistant to strong acids and leaches.

The operating temperature is between -5°C and +50°C. Temporary temperature peaks of +70°C is practicable and does not harm the buffer. When exposed to -5°C the material becomes harder, but this does not affect the consistency of the material.

- **Maintenance Free**
- **Lightweight installation**
- **Ease of Installation**
- **Compression up to 70% of buffer height**
- **Highly elastic and tear-resistant**
- **Aging resistant**
- **Material is volume compressible**
- **Operating temperature: -5°C to +50°C (characteristics may change depending on ambient temperature)**